

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

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In the Matter of )

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Amendment of the Commission's Rules to )

GN Docket No. 96-228

Establish Part 27, the Wireless )

Communications Service ("WCS") )

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Comments of American Mobile Radio Corporation

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

American Mobile Radio Corporation ("AMRC") hereby comments on the Notice of Proposed Rulemaking in the above-referenced docket.<sup>1/</sup> AMRC, which is one of four applicants for authority to operate a satellite Digital Audio Radio Service ("DARS") system,<sup>2/</sup> is disappointed that the recent Appropriations Act requires the Commission to reallocate frequencies that AMRC had hoped would be allocated for satellite DARS and requires the Commission to auction those frequencies. These matters, unfortunately however, at this point are beyond the Commission's discretion. These comments, therefore, are limited to preserving as much utility as possible for the remaining spectrum that AMRC hopes will be available for satellite DARS. In particular, AMRC urges the Commission to adopt out-of-band emission limits that would protect satellite DARS receiver operation in the 2320-2345 MHz band. As discussed in the attached Technical Statement of AMRC Senior Scientist Richard O. Evans, the Commission should increase significantly the out-of-band emission attenuation limits proposed in the *NPRM*, in order to protect satellite DARS receivers in the 2320-2345 MHz bands, particularly from any terrestrial mobile operations in the WCS.

Therefore, AMRC respectfully urges the Commission to modify the out-of-band emission

<sup>1/</sup> FCC 96-441 (November 12, 1996).

<sup>2/</sup> File Nos. 26/27-DSS-LA-93; 10/11-DSS-P-93.

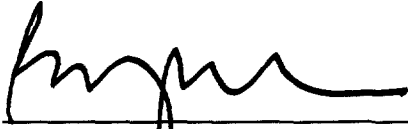
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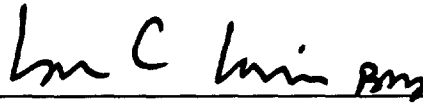
attenuation limits as recommended in the attached Technical Statement.

Respectfully submitted,

**AMERICAN MOBILE RADIO CORP.**



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Dated: December 4, 1996

## TECHNICAL STATEMENT

The out-of-band emission limits proposed in the *Notice of Proposed Rulemaking* (paras. 33 and 34) are not sufficiently stringent to protect satellite DARS receivers from terrestrial transmitters in the proposed WCS band. Mobile satellite DARS receivers may reasonably be expected to be widely distributed. WCS transmitters in the mobile service may also be expected to be widely distributed, and hence may very frequently be transmitting from vehicles nearby satellite DARS equipped vehicles. An example of a worst case situation is that of two vehicles side-by-side at a traffic light, where the separation between the antennas is assumed in the following to be 2.0 meters. The table below shows a calculation of the out-of-band emission limits required to protect DARS receivers in the expected environment using receiver parameters from the AMRC application. The table also shows a calculation of the out-of-band emissions required to protect a DARS receiver from a fixed WCS transmitter.

From the table, 115 dB of attenuation of mobile transmitter out-of-band emissions is required to protect a DARS receiver under the assumed conditions. That is a large value that would be difficult to achieve economically without wide frequency separation. The requirement is less stringent for fixed WCS transmitters since they benefit from a greater assumed physical separation distance. The separation distance assumption is important. If WCS transmitters were used in an application that required transmitters to be mounted at traffic lights or other locations where vehicles are likely be nearby for extended periods, then a separation distance less than 50 meters would be appropriate for calculating the limit.

Further, it is important that the requirement include a specific measurement bandwidth. The NPRM implies a bandwidth of 1.0 MHz. AMRC proposes 10 kHz since its application includes channels with bandwidths as small as 10 kHz. The table shows the out-of-band emission limit in a 10 kHz bandwidth as well as the 1 MHz bandwidth.

**WCS Transmitter Out-of-Band Emission Attenuation Required  
to Protect Satellite DARS Receivers**

Satellite DARS Receiver Noise Temperature	200 K
Equivalent Noise Power Density	-145.6 dBW/MHz
Allowable Increase in Noise Temperature	6.0 %
Equivalent Allowable Interference Power Density	-157.6 dBW/MHz

Satellite DARS Receiver Antenna Gain	3.0 dBi
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Assumed WCS EIRP	0.0 dBW
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Required Attenuation of WCS Emissions	161 dB
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**WCS Transmitter**

	<b>Mobile</b>	<b>Fixed</b>
Assumed WCS Transmit Frequency	2320 MHz	2320 MHz
Assumed Distance - WCS to SDARS	2.0 meters	50.0 meters
Free Space Loss	45.8 dB	73.7 dB

<b>Out-of Band Emission Attenuation Required at WCS Transmitter Output Measurement Bandwidth</b>	<b>116 dB 1 MHz</b>	<b>87 dB 1 MHz</b>
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Attenuation - FCC Proposal	43 dB	70 dB
Additional Attenuation Required	72 dB	17 dB

<b>Out-of Band Emission Attenuation Required at WCS Transmitter Output Measurement Bandwidth</b>	<b>135 dB 10 kHz</b>	<b>107 dB 10 kHz</b>
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I, Richard O. Evans, hereby certify to the following:

I am Senior Scientist of American Mobile Radio Corporation. I am the technically qualified person responsible for the foregoing Technical Statement. I declare under penalty of perjury that the Technical Statement is true and correct to the best of my knowledge.

Richard O. Evans  
Richard O. Evans

December 4, 1996